

Consensus	HWLVLLGL	CIVKIP	LR..KTR.T	LS.KN.LNNE	LKE.AYRLSQ	I	LT	60	(2)
boPAG 8			TKM..	QEA	IRE.QL.ED.	D.QPHS..	H..	59	
boPAG 2			L..IL.	KKM..L.E.	RE..L..	E.Q..	KN--D.KI.	56	
boPAG12			L..IL.	KM..L.E.	RE..L..	E.R..	K--D.KI.	56	
boPAG11		F..	..IML	TKT..	EI WRE.KC..S.	E.Q.N.M.D	D.ASDPK.S.	59	
boPAG 9		I..	..	QV..K..	G..M.K..	..HP..	..F..	59	
boPAG10		G..	L..M.I.	QM..E.	REHRL.T.	SE.HP.N.	KAANDQ.IIY	60	
boPAG 4			..	RV..TK.	G..M..	V..H..	..F..	59	
boPAG 6			..	RV..NA	I.G.T..I	H..P..	..F..	59	
boPAG 1			..	RL..NV	V.G..M..	H..S..	..F..	59	
boPAG 3		DD..	..	RV..N.	V.G..I..I	HV..	..F..	59	
boPAG 5		..L TS..	IL	TKV..K.	E..M..	Q..	S..I..	59	
boPAG 7			..	RV..K.	G..M..	DP..H.	..F..	59	
Consensus	.HPLRNI.D.	.YVGNITIGT	PPQEFQWFD	TGSSDLWVPS	I.C.S.AC.T	H.RFRH..SS		120	(62)
boPAG 8	S.Q.K.FQNA	V.F.T..	..	..	VD.Q.PS.SK	K..DPQK.T		119	
boPAG 2	I..YL.T	A..	..	..	T.T.P.Y.	KT.NPON.		116	
boPAG12	I..K.YL.M	A..	..	..	S.V.P.Y.	KT.NLHN..		116	
boPAG11	T..AL.M	A..	..	..	K.I.P.H.	IT.D.HK.		119	
boPAG 9	I..MNL	V..	..	..	FCTM-P.S.	PVW..QLQ.		118	
boPAG10	H..SYK.F	S.I..N.	..	..	Y.Q.SS.YK	NS.VPCN.		120	
boPAG 4	I..R.F	..	..	..	F.N.ST.SK	D..LE.		119	
boPAG 6	..R.L.F	..	..	..	F.N.SS.AA	V..HQ.		118	
boPAG 1	T..K.L	V.M..	..	..	DF.T.P.S.	V..LQ.		119	
boPAG 3	T..K.L	I..	..	..	DF.T.R.S.	V..LQ.		119	
boPAG 5	I..M.M	V..K..	..	..	VF.P.S.S.	I..LE.		119	
boPAG 7	I..R.I	F..	..	..	D.N.TS.A	V..LQ.		119	
Consensus	TFR.TNKT.F	I.YGSG.MKG	L..DTVRIG	LVSTQDPFG	LS.EE-.GF.	..-DGVLG		180	(120)
boPAG 8	..OPL.QKIE	LV..T.	V.GS..IQ.	N..IVN.I.	..ONQSS.VL	EQVPY..I..		179	
boPAG 2	S..EVGSPIT	F..P.II.Q	F.GS..	N..PE.S.	..L.Y.D	SLP.F.I..		174	
boPAG12	S..GQ.HQSPIS	S..P.II.Q	F.GS..	N..LK.S.	Q..Y.D	GAP.F..		174	
boPAG11	..L.RRP.H	L..M.N.	V.AY.	K..	LQO.F.D	NAP.F..		177	
boPAG 9	..OP..	T..S.	F.AY.	D..	VV.Y.LE	GRN.Y..		176	
boPAG10	..KA..I.N	TN.TATS.I	Y.VY.	N..VA.	LK.F.D	DVP.F.I..		178	
boPAG 4	..LSRR..S	T..RIEA	LVVH..	D..Q.	CL..S.E	GMR.F..		177	
boPAG 6	..P..R.T.	R..	VVVH..	D..	CLKD.S.K	GIP.F.I..		176	
boPAG 1	..L..R.T.	R..	VVVH..	N..	I..Y.E	GRI.Y..		177	
boPAG 3	..L..R.T.	R..	VVAH..	D..	V..Y.E	GRAYY..		178	
boPAG 5	..SGL.Q..S	T..ST.	F.AY.	D.L..E.	M..H.E	DLPF..		177	
boPAG 7	..P..R	I..R.N.	VIAY.	D..	V..Y.A	HKRF..I..		177	
Consensus	L.YP..S..G	AIPIFDNLKN	QGAISEPVFA	FYLS....EG	SVVMFGGVDH	..YKYGELNW.		240	(180)
boPAG 8	..A.SLAIQ	TT.V.	REV..	..SRPENI	..T..	T.H..K.Q.I		239	
boPAG 2	..AF.AMGIED	T..WS	H..F..	..NTNKP	..	R..I		234	
boPAG12	..A.SI.IK	I..WS	..F..	..NTCQP	..	R..I		234	
boPAG11	..S.SLAVP	T..K.Q	..I..	..TRKEN.	L.L..	S.H..K..I		237	
boPAG 9	..N.NI.FS	..	..	..KNKQ	..	Q..I		236	
boPAG10	..G.RRTIT	..N..WK	..V..	..SOKEN.	..NR	A..V		238	
boPAG 4	..S.TNI.PS	..YK	E..	..KDER.	..A..	R..I		237	
boPAG 6	..S.NKTFS	..F..K	E..	..KDKQ	..	R..V		236	
boPAG 1	..N.NI.FS	..K	R..	..KDER.	..	R..E..V		237	
boPAG 3	..N.NI.FS	..K	I..	..KDEQ	..	R..E..V		238	
boPAG 5	..N.DM.FIT	T..	..F..	..GKVK	..	T..V		235	
boPAG 7	..N.WNL.WSK	M..K..	E..	..NI	..	..		213	
Consensus	P..Q.G.W..	MDRISM.R.	VIACS.GC.A	LVDTGTGS	I.	GP.RLV.NI.	KLI.A.P.-G	300	(239)
boPAG 8	..VT.ARF.QV	A.SSMT.NGN	..VG..Q..Q.	V..	..LLV	..TH..TD.L	..NPN.ILN	299	
boPAG 2	..VS.TSH.QI	S.MN..NGT	..T..C.E.	..L..	..MY	TK..T.H	..MN.RL.EN	293	
boPAG12	..VS.TRY.QI	S.N..NGN	..T..R.Q.	..L..	..M.H	T..IT.H	..MN.RH.Q.	293	
boPAG11	..VS.TKS.LI	TV..NGR	..G.EH.E.	..L..	..H	A.P.T.Q	..F.H.M.Y.	296	
boPAG 9	..LIEA.E.RV	H..K.T	..D.E.	..H..	..H.E	G..N.H	..R.RTR.FD	295	
boPAG10	..VS.V.S.HI	NI.S..NGT	..V..KR.Q.	SWIR..FLSA	W.K.I.SK.Q	..H.R..ID		296	
boPAG 4	..LAKA.D.SV	H..K.K	..G.K.	..S.D.V	..ST.N.W	..G.T.Q.		296	
boPAG 6	..LI.V.D.FV	SI..PV.	..D.K.	..D.V	..ST.N.W	..R.R.L.		295	
boPAG 1	..LI.A.D.SV	H..IE.K	..D.K.	..D.V	..R.N.H	..R.G.I.R.		296	
boPAG 3	..LIEA.D.II	H..K.K	..I..GS.E.	..I..	..A.E	..RK..NK.H	..G.R.RH	297	
boPAG 5	..LI.A.E.SL	H..K.K	..G.E.	..FY..	..L.L	..N.Q	..G.T.Q.	294	
boPAG 7	..	..T.N.E	..E.A.	..	..S.N.Q	..G.ID.Q	RI.G.T.R.	257	
Consensus	SE..VSC.AV	..LPSIIIFTI	NGI.YPVP..	AYI.KDSRG.	C..F....	---S..ET		360	(295)
boPAG 8	D.QML.D.I	KS..TLLL	..V..PD	Y..ORF.ERI	..FIS.QGGTE	ILKNLGT.S.		359	
boPAG 2	..YV..D.D	NT..PV.N.	..D..LRPQ	..I.QN-S	..RSV.QGGTE	..N..SLN.		348	
boPAG12	..YV..D.D	KT..PV.N.	..D..LRPQ	..T.AQN-F	..LSI.HGGTE	..T..SP.		348	
boPAG11	..YM.L.PVI	SI..PV.	..D.S.RE	Q.I.NSL	..LST.HGD-D	..T..--DQ		348	
boPAG 9	..KHY..F.T	KY..T.I.	..K..MTAR	..F..R	..YSA.KENTV	..R.TSR.		351	
boPAG10	R.HV..Q.I	GT..PAV.	..D..AQ	..QSL.G-Y	..FSN.LVRPQ	..RVNES.		352	
boPAG 4	..HY..S.	NS..	KSNN.R.GQ	..L..R	..FTA.KGHQO	..S..ST.M		352	
boPAG 6	PQYF..S.	NT..	..N.RL.AR	..H..R	..YTA.KEHRF	..S..PI.		351	
boPAG 1	..HY.P.SE	NT..V.	..N..GR	..L.D.R	..YTT.QENRV	..S..ST.		352	
boPAG 3	..KYYI..S.	NT..	..N.C.GR	..VL..R	..YSM.QENKV	..S..ST.		353	
boPAG 5	..HYI..F.	IS..	..NI..AR	..H..H	..YPT.KENTV	..ST..T.		350	
boPAG 7	..KYY..S.	NI..	..VN..PR	..L..H	..YTT.KEKRV	..RR..T.S		313	
Consensus	WILGDVFLRL	YFSVFDORGND	RIGLA.AV					388	(323)
boPAG 8		..Y..N	..P.A					387	
boPAG 2	..I..Q	..K.R	..P.					376	
boPAG12	..G..Q	..R.S	..Q.					375	
boPAG11		..Y..N	..P.					376	
boPAG 9	..A..R	..	..R.					379	
boPAG10	..I..N	..	..P.					380	
boPAG 4	..L..R	..RK.	..TK.					380	
boPAG 1	..Y..	..	..R.					379	
boPAG 3	..V	..	..R.					381	
boPAG 5	..	..	..QV-					377	
boPAG 7	..V..E	..	..RR.					341	

FIG. 1

Consensus	<u>MKWLVLGLV</u> AFSECIVKIP LRRVKTMRKT LSGKNMLNMF LKEHPYRLSQ ISFR.SNLT ⁽¹⁾ I	60 (3)
ovPAG4	.....F.....DV.....P.....G.....I.....	60
ovPAG7	.....F.V.....L.....N.....V.....Y.....P.....D.V.....	60
ovPAG3	.....F.....V.....L.....N.....I.....V.....Y.....P.....D.V.....	60
ovPAG6	.....SI.....E.....A.....G.....	60
ovPAG1	.....N.....K.....S.....A.....A.....	60
ovPAG5	.....SV.....RV.....E.....MK.NV.QE.....NE.SL.....KY.....A.....N.T.N.KMAF	60
ovPAG9	.....M.....N.....P.....M.....A.....GL.....	59
ovPAG2	.....W.....L.....IM.....TKT.....EI.....RE.....L.....E.QAN.M.D.D.ASDPK.ST	60
ovPAG8	.....A.....I.....SN.....A.....K.....G.....T	60
Consensus	HPLRN..D.. YVGNITIGTP PQEFQVFD ⁽¹⁾ T GSSDLWVPS. FC.S.T---C S.H.RFRH.Q	120 (60)
ovPAG4	.....IR.TF.....L.....V.....V.....L.N.S.....I.V.....L.....	117
ovPAG7	L.....MK.IF.....P.....S.....T.....I.....WN.S.....TLV.....K.R.....	117
ovPAG3	L.....MK.IF.....P.....S.....T.....I.....WN.S.....TLV.....K.R.....	117
ovPAG6	.....TK.LV.....L.....S.....D.....AIEA.....L.T.....L.....	117
ovPAG1	.....IM.ML.....L.....I.....N.L.P.KRP.....KQDK.K.H.....	120
ovPAG5	V.M..FL.LA.....P.M..RG GEO.R.....N.....T.PA.....YS.IT.KYWE	117
ovPAG9	.....S.YI.ML.....T.....K.....I.....N.....T.PA.....TQA.....YR.....	116
ovPAG2	.....AL.MA.....V.....K.....R.....I.....K.I.PA.....YT.IT.D.HK	117
ovPAG8	.....M.IW.LL.....L.....R.....L.....L.N.S.....AK.VM.....RL	117
Consensus	SSTFR.TNKT F.I.YG.G.M KGVVAHDTVR IGDLVSTDQP FGLS..E.GF ...PFDGVLG	180 (120)
ovPAG4	.....T.....W.T..A.T.....I.....MA.Y.....HGRR.....	177
ovPAG7	.....T.....W.T..A.T.....I.....MA.Y.....MDRR.....I.....	177
ovPAG3	.....LA.....G.M..A.K.....V.....VV.S.....EHRQ.....	177
ovPAG6	.....P..R.....S.T..C.TV.....V.....TA.HVS.....RCT.....	177
ovPAG1	.....F..D.....R.YF.S.T.....R.F.....IFL.SWL.....D-I.....I.....	179
ovPAG5	.....Y.H.T.P.....E.A..S.RI.....HL.Y..IQ.....N.....LV.Y.....NGL.....I.....	177
ovPAG9	.....L..R.....C.T..S.GL.....I.....N.....TLK.Y.....ENI.....	176
ovPAG2	.....L.RRP.....R.L..S.M..N..L.Y.....N.....LQOF.....DNA.....	177
ovPAG8	.....Y.L.....M.F.RV.KI.....E..VR.....A..T.....IA.T.....ENTTL..I.....	177
Consensus	LNYP..S..G IPIFDKLNK EGAISEPVFA FYLSKD.QEG SVVMFGGV ⁽¹⁾ VDH .YYKGELN ⁽¹⁾ WV	240 (180)
ovPAG4	.....RQ.CCR PT.....Q.....E.....R.....	237
ovPAG7	.....RQ.CSK TKW.....S.....E.....T.....SL.....	237
ovPAG3	.....NL.FSK T.....E.....S.....K.....	237
ovPAG6	.....SI.FWS T.....G.....R.....	237
ovPAG1	.....KI.FS. A.....F.....N..K.....R.....	239
ovPAG5	.....N..IL. A.....N..K Q.....I.....GTVN.....L.L.....K.....I.....	236
ovPAG9	.....NI.FS. AV.....L.....F.....E.....R..E.....	236
ovPAG2	.....S..SLAVP. T.....Q.....I.....TNKEN.....L.L.....S.H..K.....I.....	237
ovPAG8	.....S..NT.CF. A.....N.....N.....	212
Consensus	PL..AGDW.I VDRISM.R VIACS.GC.A LVD ⁽¹⁾ TG.S.I GP.RLV ⁽¹⁾ DN ⁽¹⁾ IQ KLIGA.P.G.	300 (240)
ovPAG4	..VK.D.T.Q.....R.E.....D.D.....L..A.F.H..G..I.D.....SE.RDL	297
ovPAG7	..VK.D.S.H.....R.E.....D.D.....L..A.F.H..G..I.D.....SEQRDF	297
ovPAG3	..IK..SV R..S.T.K.E.....D.R.....S..H.Q..G..I.V.....TM.Q.S	297
ovPAG6	..IP..NMV HM..YIE.N.....A.K.....V.....AAF.E..KSQ..M..F...R.R.S	297
ovPAG1	..IHP.E.S. PL.....R.K.....G.E.....G..T..L.L.....RTV.E.....H...TQOCF	299
ovPAG5	..IRV..R. R..H..KGK L.G.G.E.....P..L.N..T..T.....R...M.L.P	296
ovPAG9	..TK..IV RL.....IG.K.....GD.E.....V...TAF.G..RK..KK...RRR.N	296
ovPAG2	..VSQTKS.L.T.....NGK..G.EH.E.....T..L.H..AGP.T.....F.H.V.YDS	297
ovPAG8	.....THK.....E.....D.R.....S..H.Q..G...V..H..TM.Q.S	258
Consensus	KHYVSCSAVN TLPSIIFTIN GINYPVPAQA YILK.S.G.C YT.F...RVR .STE.WVLGD	360 (300)
ovPAG4	.....I.....G.T.H.....A.RAK...T...S.....	357
ovPAG7	.....I.....G.T.H.....A.RAK...T...S.....	357
ovPAG3	M..P.....GFT.H.....A.RAK...T...S.....	357
ovPAG6	..Y..P..V.....R..S.....GR.....NHR.R.....T.KENQWS P...I.I.....	357
ovPAG1	EYF.....Y A.....V.....P.....LV.D.R.Q.....SP.QVN.AN P.A.N.I.....	359
ovPAG5	.....TI. I.....TL.....T.Q.G. F.T.KGA..F KHR.T.....	356
ovPAG9	.....DDA.R. S.T.QEN...L...S.L.N	323
ovPAG2	EYM...PVIS I..FV.....S.D.S...E...Q.I.NSL. LSS.HGDN--DK.I...	353
ovPAG8	M...P.....GR.....DFR.R.....N.KKKIA. TF..Y...E	318
Consensus	VFLRLYFSVF DRGNDRIGLA PAV	383 (323)
ovPAG4	.....M	380
ovPAG7	.....M	380
ovPAG3	.....H.....R.G	380
ovPAG6	.....H.....R.	380
ovPAG1	.....R.....R.	382
ovPAG5	I.....Y ..EHN..A..Q.R	379
ovPAG9	.....V.L.....	346
ovPAG2	.....Y ..N.....	376
ovPAG8	P.....	341

FIG. 2

66T60-49T6260

boPAG 2 4 5 6 7 8 9 10 11 12

Hybrid(d25)	4	1	1	1	5	1	1	1	1	1	1	1
-------------	---	---	---	---	---	---	---	---	---	---	---	---

Immuno (d25) 19

RT-PCR (d19)	9	11	3	3	3	6
--------------	---	----	---	---	---	---

FIG. 3

BoPAG:	1	2	3	4	5	6	7	8	9	10	11	12
1	100 100											
2	73 57	100 100										
3	91 86	74 58	100 100									
4	88 76	73 55	87 73	100 100								
5	86 75	60 61	86 74	85 76	100 100							
6	89 80	73 57	88 78	89 76	84 70	100 100						
7	87 79	73 56	87 78	86 71	85 72	89 77	100 100					
8	68 53	68 55	67 51	67 49	70 54	69 53	71 53	100 100				
9	87 77	74 59	88 78	85 68	85 74	87 74	86 71	68 53	100 100			
10	70 56	72 50	69 55	68 53	71 58	70 57	68 53	71 55	69 57	100 100		
11	74 59	77 62	73 58	73 56	76 62	73 59	75 59	72 56	73 57	72 57	100 100	
12	75 61	90 83	75 60	74 58	77 63	75 59	74 58	70 56	75 60	73 60	79 64	100 100

FIG. 4

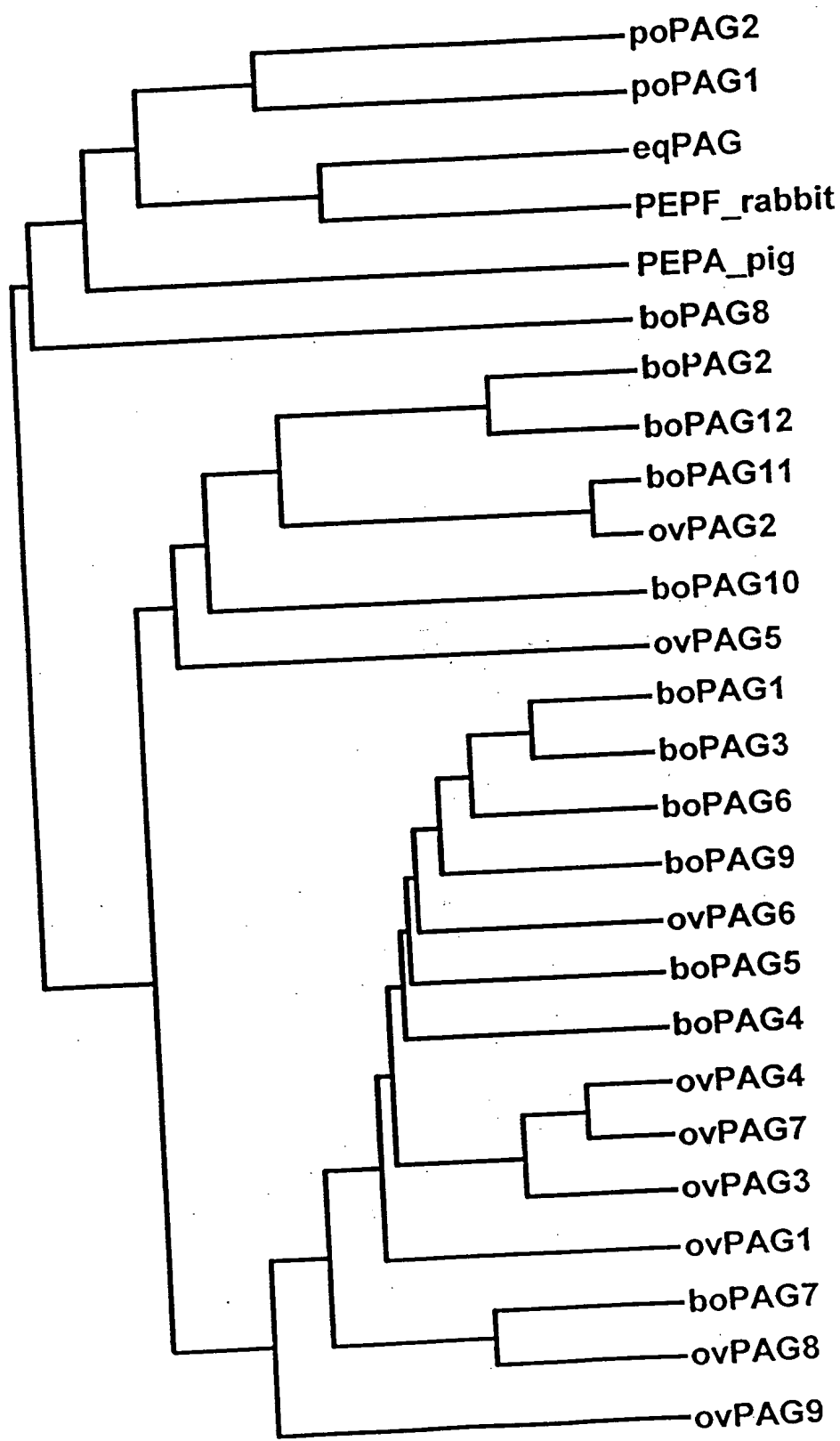


FIG. 5

6667ED 497E2E60

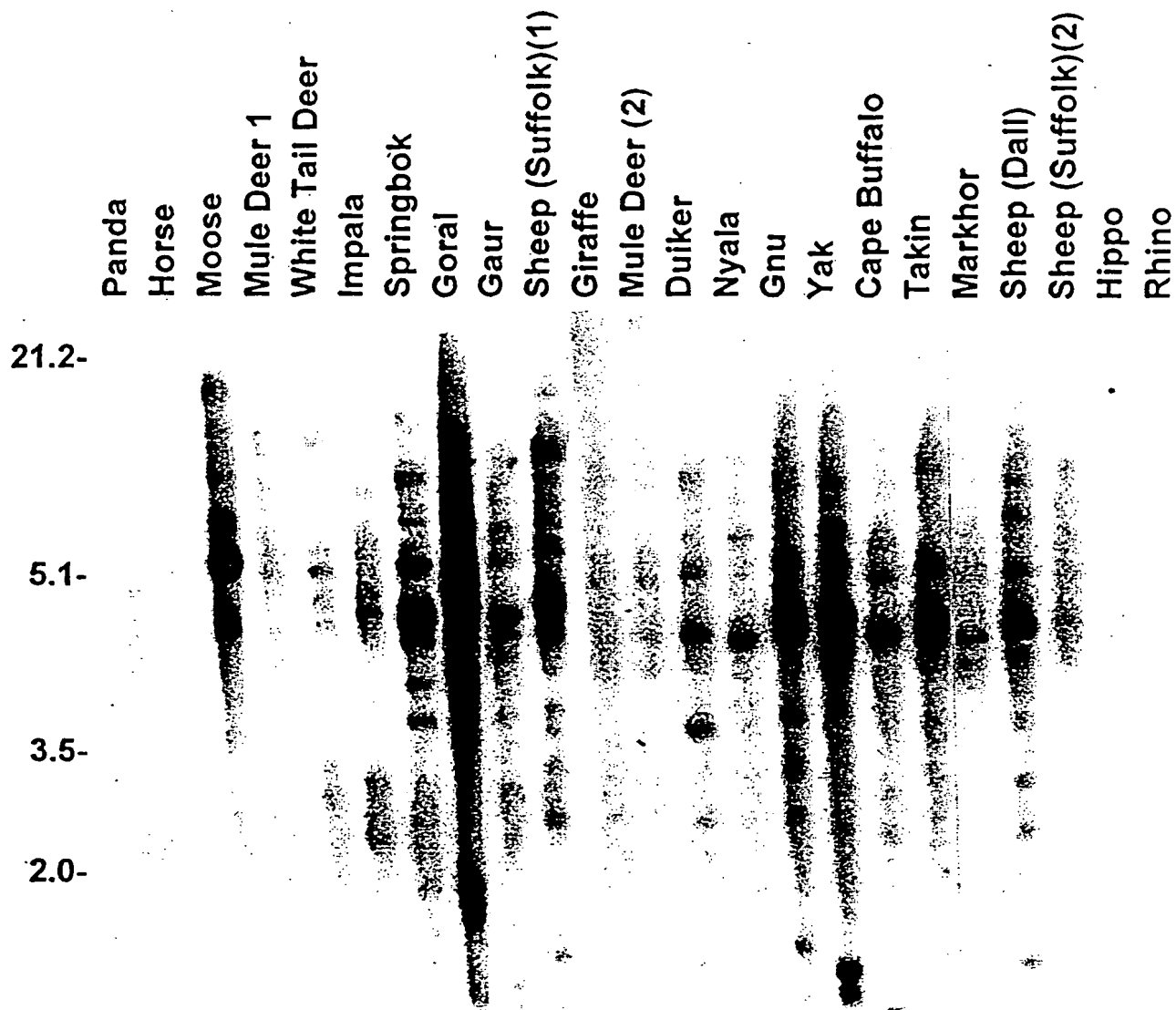


FIG. 6